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ABSTRACT

A study investigated the nature of college students' English-as-a-second-language self-concept using a hierarchical, multidimensional model of self-concept. Subjects were 306 students in a Hong Kong higher education institution responding to a self-concept questionnaire. Confirmatory factor analysis (CFA) replicated previous findings that a global academic self-concept construct failed to explain the students' English, Chinese, and mathematics self-concepts. The relationship between global academic self-concept and self-concept for each of the subject domains was inconsistent and unsystematic for a representation of self-concepts in these domains by the global construct. However, there were strong relationships between a global English self-concept and self-concepts for the four language skills (listening, speaking, reading, writing). CFA showing that a global English self-concept can adequately explain the relationships among self-concepts for the language skills provided clear and strong support for the hierarchical nature of English self-concept at the specific subject domain level. Of particular interest is the larger path leading from the global English self-concept to the receptive language skills (listening, reading) than to the productive skills (speaking, writing) that seem to reflect a more passive and receptive role students perceived themselves to take in the language learning process. Contains 26 references. (Author/MSE)

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Abstract

This study examined the hierarchical nature of higher education students' English self-concept on the basis of a hierarchical, multidimensional model of self-concept proposed by Shavelson et al. (1976). Confirmatory factor analysis (CFA) replicated previous findings that a global academic self-concept construct failed to explain students' English, Chinese and math self-concepts. The relation between the global academic self-concept to the self-concept of each of the subject domains was inconsistent and unsystematic for a representation of self-concepts in these domains by the global construct. However, there were strong relations between a global English self-concept with the self-concepts of the 4 English skills of listening, speaking, reading and writing. CFA showing that a global English self-concept can adequately explain the relations among self-concepts of the 4 skills provided clear and strong support for the hierarchical nature of English self-concept at the specific subject domain level. Of particular interest is the larger paths leading from the global English self-concept to the "receptive" language skills (listening, reading) than to the "productive" language skills (speaking and writing) that seem to reflect a more passive and receptive role students perceived themselves to take in the process of learning the language.

The potential importance of student self-concepts in educational psychology has received increasing concern because self-concept is found to have the capacity to affect and predict educational outcomes. Recent research has shown a causal relationship between self-concept and subsequent achievement and that this relationship is reciprocal in nature (Hay 1997; Helmke & Aken, 1995; Marsh & Yeung, 1997a; Muijs,1997). Watkins and Gutierrez (1990) examined the causal relationships among self-concept, attributions, and English and math achievement and found that attributions for successful outcomes to ability or effort mediated the causal relationship between achievement and self-esteem in specific areas of the academic context. Other studies have shown that self-concept may affect course choice. For example, Marsh and Yeung (1997b) found that self-concepts in specific academic

areas were more strongly related to subsequent course selection than were school grades.

The Shavelson et al. and Marsh-Shavelson Models

Two major works have made immense contributions to the study of the self-concept structure (Marsh & Shavelson, 1985; Shavelson et al., 1976). They proposed a self-concept model that could be empirically scrutinized. According to this model, there is a general self posited at the apex of the self-concept hierarchy, which is divided into academic and nonacademic facets. Under the nonacademic facet are social, physical and emotional self-concepts whereas under the academic facet are self-concepts in various academic domains such as English and math. Further down the hierarchy below the academic and nonacademic facets may be self-concepts in even more specific areas.

Second, Marsh and Shavelson (1985) further scrutinized the self-concept model and found that the self-concept structure was, in reality, more complicated than the one originally proposed in the Shavelson et al. (1976) model. Specifically, they found that the multifacets described in the original model were so distinct and diverse by late adolescence that the hierarchy was necessarily very weak. This has led to the Marsh/Shavelson revision mode in 1985.

Multidimensionality of Academic Self-Concept

Studies in testing the multidimensionality of self-concept are extensive. Nearly on all occasions, the multidimensionality has been supported and substantiated (see Byrne & Gavin, 1996 for an extensive review). Besides, the multidimensional nature of student self-concept has also been extensively substantiated across genders, age and cultures.

Recent research in the multidimensional study of self-concept has focused on the investigation of domain-specific self-concepts. Vispoel (1993, 1995) constructed the Arts Self-Perception Inventory (ASPI) to assess students' self-concepts in four major arts domains. Marsh, Hey, Roche, and Perry (1997) administered a domain specific Physical Self-Description Questionnaire (PSDQ) to elite and physical education students and found that self-concepts are remarkably domain-specific. Along the same line are recent studies conducted by Chapman and Tunmer (1995, 1997) who undertook a longitudinal study of beginning reading achievement and reading self-concept of young children. More importantly, the Academic Self-Description Questionnaire (ASDQ; Marsh, 1990, 1992), which the present study has adapted, was one of the instruments developed as a consequence of the emphasis on measuring a diverse range of domain-specific academic perceptions in the normal school curriculum. Marsh (1992) administered the ASDQ to a high school sample in eight school subjects and found that relations between academic self-concepts and academic achievements are remarkably content specific. The ASDQ has been adopted in the present investigation to measure self-concepts leading to the three main core subjects: English, Chinese and math as well as the four skill-specific self-concept constructs of English Listening, Speaking, Reading and Writing.

The Hierarchical Nature of Self-Concept

Whereas the multidimensional nature of self-concept has received strong support and ample attention, the hierarchical nature of self-concept seems to have been undermined. Despite apparent support for a hierarchical tendency in previous studies, the self-concept hierarchy has been found to be weak and unsystematic. On the contrary, there is a growing amount of studies that identified the impending

problems associated with the hierarchical postulation of the Shavelson model (Byrne 1984; Marsh & Shavelson, 1985). Marsh, Byrne, and Shavelson (1988) questioned the theoretical and empirical identity and definition of a global academic self-concept and suggested its use be discontinued.

Marsh, Hey, Johnson, and Perry (1997) have found reasonable support for a higher order factor in explaining and representing domain-related first-order factors. Their finding supported a hierarchical relationship of physical self-concept in that a higher order factor was able to represent the six components of self-concepts: Skill, Body, Aerobic Fitness, Anaerobic Fitness, Mental Competence, and Overall Performance.

In short, despite the huge volume of studies in support of the multidimensional nature of self-concept, the proposed hierarchical nature of self-concept has received much less support. In two studies, the present investigation examined the multifaceted and hierarchical nature of (a) the Global academic self-concept construct, and (b) self-concepts within the specific subject domain of English.

Method

Participants

Survey data were collected from a higher education institution in Hong Kong. Due to missing data, of the 321 students sampled, responses from only 306 (138 males 168 females) were used in the analysis. The participants were aged 17 to 28 and consent was obtained before they responded to the questionnaire. Students who participated in the study were enrolled in various disciplines of study, some undertaking degree courses, and some enrolled in higher diploma programs. In view of the maturity and the language proficiency of the participants, the students completed the questionnaire in class without any teacher assistance.

Materials

The survey consisted of items adapted from Marsh's (1990) SDQ. Academic self-concept in each specific area was inferred from six items: "Compared to other students I'm good at ...", " I'm hopeless when it comes to ..." , " I have always done well in ...", "Work in ... is easy for me", "I get good marks in ....", " I learn things quickly in ...." (1 = Definitely False to 8 = Definitely True). These items were strictly parallel across all five self-concept constructs considered here: Listening, Speaking, Reading, Writing, and a Global English self-concept construct. Thus, for example, for self-concept in Listening, the item would read "Compared to other students I'm good at listening" whereas the item for Writing would read " Compared to other students I'm good at writing".

Study 1

In this research, two separate studies were conducted. In Study 1, two confirmatory factor analysis (CFA) models investigated the multidimensional and hierarchical nature of the global academic self-concept construct in relation to self-concepts in English, Chinese and Math.

Responses to the survey items of both Studies 1 and 2 were scored so that higher scores reflected a higher self-concept. We first conducted principal components analysis (PCA) with varimax rotation (SPSS, 1995) for the constructs of Global academic, English, Chinese and Math self-concepts. Then, on the basis of PCA results, two CFA models were tested with item pair scores. Thus, using three indicators for each of four constructs, a 12 x 12 covariance matrix was constructed. The approach of CFA and the use of item pairs have been well documented elsewhere

(e.g., Bollen, 1989; Byrne, 1989; Joreskog & Sorbom, 1993; Marsh 1992; Pedhazur & Schmelkin, 1991) and is not further detailed here. The analyses were conducted with the SPSS version of LISREL 7 (Joreskog & Sorbom, 1988). Throughout this paper, in evaluating the models, we examined the ability of each a priori model to fit the observed data and the theoretical predictions. The goodness of fit of models were evaluated based on suggestions of Marsh, Balla, and MacDonald (1988) and Marsh, Balla, and Hau (1996) with an emphasis on the Tucker-Lewis index (TLI), but we present also the chi-square test statistic and the relative noncentrality index (RNI). A TLI value greater than .9 is typically interpreted to mean that the model fit is adequate.

Two CFA models were tested: Model 1.1 tested the ability of the one global and three domain-specific facets of academic self-concepts to form four distinct constructs. Model 1.2 tested the ability of the Global Academic construct to represent the three domain-specific constructs (Figure 1).

Results

Internal Consistency Estimates of Reliability

In preliminary analyses, coefficient alpha estimates of reliability were determined for each scale considered in this study. The internal consistency of the Global academic, English, Chinese and Math scales were promising (alphas = .91, .95, .91, .94, respectively).

CFA Solutions

Both models presented here converged to proper solutions and had acceptable model fits. A summary of the goodness-of-fit indices and χ^2 statistics are shown in Table 1.

Model 1.1: Multidimensional academic self-concepts. The first requirement in support of the multidimensionality of academic self-concept is the formation of distinct factors with substantial factor loadings. Similar to the results of the principal component analysis, the factor loadings were substantial and statistically significant for the English, Chinese and Math constructs, varying from .84 to .98; although the factor loadings for the negative items were comparatively lower. The second requirement is the distinctiveness of factors from each other such that the correlations between them should be significantly smaller than 1. An inspection of the correlations among the constructs found that the values ranged from -.13 to .09 (see Table 2). Although CFA results of Model 1 supported the multidimensionality of the academic self-concepts, the low correlations among the domain-specific constructs and particularly the significantly negative correlation between English and Math self-concepts has clearly discarded the possibility of a single higher order factor to account for the English, Chinese and Math self-concept constructs.

Model 1.2: Relationship with the Global academic self-concept. Model 1.2 examined the relationship between the Global academic self-concept construct and the three domain-specific constructs. As expected, the path coefficients leading from the Global academic factor to each of the three self-concept factors were unsystematic, the coefficients being .64, .10, and .13 (see Figure 1) for English, Chinese and Math. This result seems to suggest that whereas the domain-specific self-concepts constructs were distinct enough to be perceived as multidimensional (as shown in Model 1.1), their respective path coefficients showed that their relationships could not be represented by a single Global construct.

Study 2

Study 2 focused only on one of the specific domains: English. Specifically, we examined the multidimensional and hierarchical nature of the global English self-concept in relation to four skill-specific self-concepts leading to Listening, Speaking, Reading and Writing. Similar to Study 1, we first conducted PCA with varimax rotation for the constructs of Global English, Listening, Speaking, Reading, and Writing self-concept constructs. Then, on the basis of PCA results, two CFA models were tested with item pair scores. Thus, using three indicators for each of five constructs, a 15 x 15 covariance matrix was constructed for subsequent CFA.

Model 2.1 tested the ability of the one global English and four skill-specific facets of English self-concepts to form five distinct constructs. Model 2.2 tested the ability of the global English construct to represent the four skill-specific constructs (Figure 2).

Results

Internal Consistency Estimates of Reliability

In preliminary analyses, the internal consistency of the Listening, Speaking, Reading, Writing, and global English scales were good (alpha = .96, .95, .95, .95, and .95, respectively).

CFA Solutions

Both models converged to proper solutions and had acceptable model fits. A summary of the goodness-of-fit indices and χ^2 statistics are shown in Table 1.

Model 2.1: Multidimensional English self-concepts. Similar to Study 1, the first requirement in support of the multidimensionality is the formation of distinct factors with substantial factor loadings. Similar to the results of the principal component analysis, the factor loadings were substantial and statistically significant for all four skill-specific constructs (varying from .83 to .98), although the factor loadings for the negative items were comparatively lower. The second requirement is the distinctiveness of factors from each other such that the correlations between them should be significantly smaller than 1. An inspection of the correlations among the constructs found that the values ranged from .57 to .78 (see Table 3). These results showed that the students discriminated the four constructs well. Thus, together with results of the principal component analysis, CFA results of Model 2.1 supported the multidimensionality of the four skill-specific facets of English self-concept. Moreover, the large and significant correlations among the four constructs also seemed to suggest the possibility of a strong higher order factor inferred from the constructs.

Model 2.2: Relationship with a Global English self-concept construct. Model 2.2 related the Global English self-concept construct to the four skill-specific constructs. The path coefficients leading from the Global factor to all the four skill-specific factors were high and statistically significant, the coefficients being .83, .75, .80 and .77 for Listening, Speaking, Reading and Writing, respectively. Thus together with Model 2.1, the large and significant correlations among the four skill-specific self-concepts showed that the four skill-specific facets were distinct enough to be perceived as multidimensional whereas the large and significant paths showed that their relationships were close enough to be represented by a single global English construct.

Discussion

The findings of the present research have addressed both theoretical and practical concerns in the study of academic self-concepts and their relation to learning.

Consistent with the previous literature, Study 1 of the present investigation has first demonstrated the multidimensional nature of academic self-concepts in which the three a priori factors of English, Chinese and Math self-concepts were distinct. This implies that students were able to discriminate the three constructs as distinct factors. More importantly, Study 1 has also revealed the problems of a Global academic self-concept construct to represent self-concepts in even the three main core subjects (English, Chinese and Math, respectively) in the typical curriculum of Hong Kong schools. The hierarchical nature of the Global academic self-concept, as hypothesized in the Shavelson model (1976) was not supported. Although the potential importance of the academic self-concept in relation to other educational outcomes has been widely researched and well-supported, the components that make up the Global academic self-concept has rarely been accurately identified and understood. In this respect, Marsh, Byrne, & Shavelon (1988) have even questioned the usefulness of a global academic self-concept construct and suggested self-concept research to investigate the more beneficial domain-specific self-concepts. Investigation of the sub-components of the Global academic self-concept construct will remain a crucial area for future research.

The major contribution of the present research is, perhaps, the microscopic analysis of the English self-concept construct and its implications for practical considerations. Consistent with previous research that have supported the multidimensional nature of students' academic self-concepts, the CFA models of Study 2 have provided further evidence in its favor at the domain level in the subject of English. Study 2 not only found English self-concept measures to be multifaceted in nature, but more importantly, a global English self-concept can adequately represent self-concepts in the listening, speaking, reading and writing skills. The distinctiveness of the four skill-specific factors implies that students can discriminate the skills very well; yet the inter-correlations of the four factors are strong enough to be accounted for by a single global higher-order factor. This result has provided strong support for a hierarchical structure within the subject domain of English.

From a practical perspective, the findings of Study 1 seem to suggest that self-concept enhancement and intervention will be more effective if they are also domain specific (i.e., separately for English, Chinese, and math). The finding that the domain-specific English self-concept is multidimensional and also hierarchical has raised new issues of concern in the area of English language teaching and learning. That is, whereas the multidimensionality implies that students clearly differentiate among the four skills, then what does the hierarchical representation of a global measure mean? Does the multidimensionality mean that the four skills should be taught and learnt as separate entities or is it just the result of the typical organization of the English curriculum in Hong Kong and perhaps in other ESL learning situations? If a single global English self-concept measure can account for all the four domain-specific self-concepts, teachers and researchers should be comfortable with a global measure instead of having to investigate the self-concepts in a range of skills; but then what does it mean in practice. Should diagnostic and enhancement intervention, for example, be conducted in a domain-specific or global environment? Again, these are some of the issues that needed to be addressed in future investigation.

Of particular interest also is the relatively larger paths leading from the Global English self-concept to the "receptive" language skills (s = .83, .80 for Listening and Reading, respectively) than to the "productive" language skills (s = .75, .77 for

Speaking and Writing, respectively). That seems to reflect a more passive and receptive role students perceived themselves to take in the process of learning English as a second language. It will be extremely interesting to see if such finding can be replicated among students of other cultures who are also learning English as a second language. It will be even more challenging for language practitioners, in particular, to explore how this passivity in learning English can be resolved.

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Table 1. Goodness of Fit Summary of Models

Model	χ^2	df	RNI	TLI	Null χ^2	Null df
Study 1						
1.1 Four distinct factors (Global academic, English Chinese, Math)	82.15	15	.977	.944	2928.93	36
1.2 Global Academic to represent 3 factors	181.46	42	.964	.944	3959.85	66
Study 2						
2.1 Four English skill factors (Listening, Speaking, Reading & Writing)	157.07	42	.978	.965	5225.70	66
2.2 Global English to represent 4 skill factors	221.27	70	.978	.967	6984.51	105

Note: N = 306. RNI = Relative noncentrality index. TLI = Tucker-Lewis Index.

Table 2. Factor Correlations From CFA Solutions of Models 1.1 and 1.2 in Study 1

	English	Chinese	Math
English	--		
Chinese	.085	--	
Math	-.129	.021	--

Note: N = 306. The academic self-concepts were each inferred from 3 item pairs. *p < .05.

Table 3. Factor Correlations From CFA Solutions of Models 2.1 and 2.2 in Study 2

	LISTEN	SPEAK	READ	WRITE
LISTEN	--			
SPEAK	.71*	--		
READ	.78*	.58*	--	
WRITE	.56*	.61*	.65*	--

Note: N = 306. The academic self-concepts were each inferred from 3 item pairs. *p < .05.

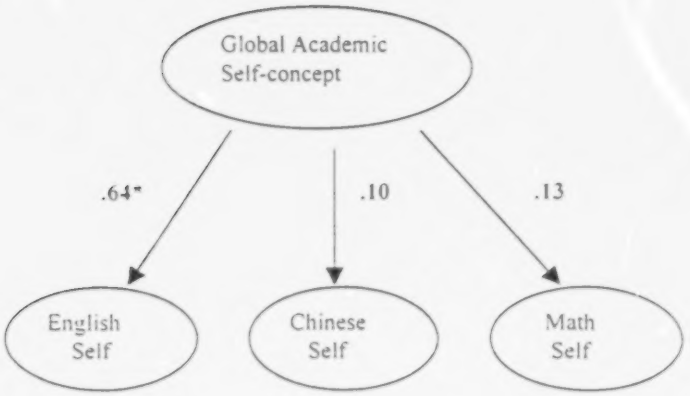

Figure 1 Structural Path Diagram of Model 1.2 of Study 1 – three domain-specific self-concept constructs to form one single Global academic self-concept construct.
Note: N = 306. This model tests the ability of the three domain-specific self-concepts to form a single Global academic self-concept construct. There are paths leading from the Global academic self-concept to the self-concepts of the three domains. English, Chinese, Math and Global academic were self-concepts each inferred from three item pairs of variables.

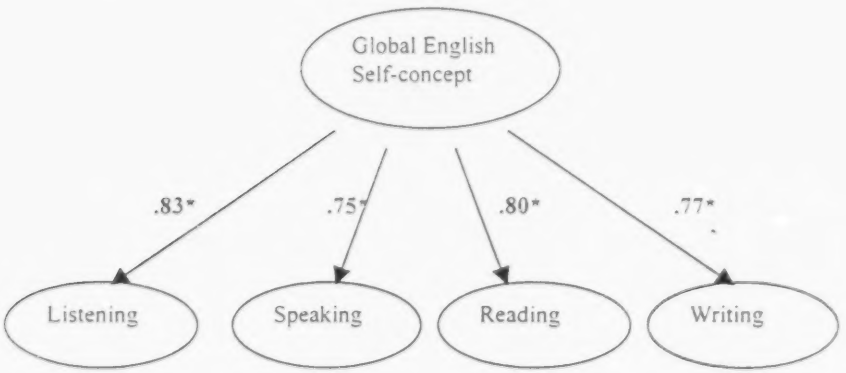

Figure 2 Structural Path Diagram of Model 2.2 of Study 2 – four skill-specific self-concept constructs to form one single Global English self-concept construct.
Note: N = 306. This model tests the ability of the four skill-specific self-concepts to form a single Global English self-concept construct. There are paths leading from the Global English self-concept to the self-concepts of the four skill-specific Listening, Speaking, Reading and Writing self-concepts. each inferred from three item pairs of variables.